

**MANIPAL ACADEMY OF HIGHER EDUCATION**  
(Deemed University)

**MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION**

**PAPER I : CHEMICAL NATURE AND METHODS OF STUDY OF  
BIOCHEMICAL COMPOUNDS AND ENZYMES**

Monday, 09 July 2001

Time available: 3 Hours

Maximum Marks: 100

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- Answer ANY FIVE Questions
  - All questions carry equal Marks
  - Write answers that are brief, clear, relevant and legible
  - Illustrate your answers with neatly drawn and correctly labeled diagrams wherever appropriate.
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- 1A. Discuss the principle of electrophoresis.
- 1B. Write short notes on TLC and GLC.
  
2. Discuss the methods for protein sequencing.
  
3. Write notes on:
  - 3A. Mucopolysaccharides.
  - 3B. Principles of different chemical reactions of carbohydrates.
  
- 4A. Discuss the different factors affecting the enzyme activity.
- 4B. Add a note on isozymes and their clinical significance.
  
5. Discuss the subcellular fractionation in detail.
  
6. Write short notes on:
  - 6A. High energy compounds
  - 6B. Write the structure of the following:
    - i) Cholesterol
    - ii) Lecithin
    - iii) Sucrose
    - iv) Creatinine
    - v) ATP

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**PAPER II : INTERMEDIARY METABOLISM**  
Tuesday, 10 July 2001

Time available: 3 Hours

Maximum Marks: 100

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- Answer ANY FIVE Questions
  - All questions carry equal Marks
  - Write answers that are brief, clear, relevant and legible
  - Illustrate your answers with neatly drawn and correctly labeled diagrams wherever appropriate.
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1. Describe the biosynthesis and breakdown of purines. How is uric acid production regulated?
2. Describe the different inborn errors of lipid metabolism.
3. Write short notes on:
  - 3A. Synthesis of lactose
  - 3B. Protein kinases
  - 3C. Heat shock proteins
  - 3D. Amino acid pool and utilization of amino acids from this pool.
4. Describe the biologically important products derived from tyrosine and their functions.
5. What are the fates of pyruvate? Write in detail each of them.
6. Describe the detail the process of transcription and its regulation. Add a note on the inhibitors of this process.

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**MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION**

**PAPER III : CHEMICAL NATURE AND METHODS OF STUDY OF  
BIOCHEMICAL COMPOUNDS AND ENZYMES**

Wednesday, 11 July 2001

**Time available: 3 Hours**

**Maximum Marks: 100**

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- Answer ANY FIVE Questions
  - All questions carry equal Marks
  - Write answers that are brief, clear, relevant and legible
  - Illustrate your answers with neatly drawn and correctly labeled diagrams wherever appropriate.
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1. Discuss the biochemical changes that are taking place in diabetes mellitus and relate them to clinical manifestations.
2. Write short notes on:
  - 2A. Enzyme tests in myocardial infarction
  - 2B. Alkaline phosphatase
  - 2C. Gamma glutamyl transpeptidase
  - 2D. Acid phosphatase
3. Vitamin D acts as a vitamin and as a hormone-Substantiate. Add a note on hypovitaminosis D.
4. Write the causes and the biochemical evaluation of respiratory acidosis. How is it different from metabolic acidosis?
- 5A. Discuss the various biochemical procedures for the diagnosis of malabsorption.
- 5B. Describe signal transduction.
6. Write short notes on:
  - 6A. Role of dietary fibre in health and disease.
  - 6B. Transport proteins in plasma
  - 6C. p53 and bcl-2

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**MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – DECEMBER 2001**

**PAPER I: CHEMICAL NATURE AND METHODS OF STUDY OF BIOCHEMICAL COMPOUNDS AND ENZYMES**

Monday, December 03, 2001

**Time available: 3 Hours**

**Maximum Marks: 100**

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- Answer ANY FIVE Questions
  - All questions carry equal Marks
  - Write answers that are brief, clear, relevant and legible
  - Illustrate your answers with neatly drawn and correctly labeled diagrams wherever appropriate.
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1. "Structure of proteins are suitable for their function". Explain with the help of hemoglobin as an example.
2. Explain the various types of enzyme inhibition with appropriate examples.
3. Describe the technique of synthesis of insulin by recombinant DNA technology. Add a note on the human genome project.
4. Describe the principles and applications of different types of electrophoresis.
5. Write briefly on:
  - 5A. Eicosanoids.
  - 5B. Applications of radioisotopes in biochemical research.
6. Write briefly on:
  - 6A. Compound lipids
  - 6B. Fluorimetry

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**MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – DECEMBER 2001**

**PAPER II: INTERMEDIARY METABOLISM**

Tuesday, December 04, 2001

**Time available: 3 Hours**

**Maximum Marks: 100**

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- Answer ANY FIVE Questions
  - All questions carry equal Marks
  - Write answers that are brief, clear, relevant and legible
  - Illustrate your answers with neatly drawn and correctly labeled diagrams wherever appropriate.
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1. Describe the metabolic changes in body during starvation.
2. Describe protein synthesis. Add a note on its inhibitors.
3. Describe the mechanism of fatty acid synthesis and its regulation. Add a note on the role of liver in fat metabolism.
4. Write note on :
  - 4A. Ribozyme
  - 4B. Wobble hypothesis
  - 4C. DNA repair mechanisms
  - 4D. Operon concept
5. Write briefly on:
  - 5A. HMP shunt pathway
  - 5B. Lipoproteins
- 6A. Discuss salvage pathway for purines and a note on Lesch Nyhan syndrome.
- 6B. Describe proteasomes and caspases

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**MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – DECEMBER 2001**

**PAPER III : CHEMICAL NATURE AND METHODS OF STUDY OF BIOCHEMICAL  
COMPOUNDS AND ENZYMES**

Wednesday, 05 December 2001

**Time available: 3 Hours**

**Maximum Marks: 100**

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- **Answer ANY FIVE Questions**
  - **All questions carry equal Marks**
  - **Write answers that are brief, clear, relevant and legible**
  - **Illustrate your answers with neatly drawn and correctly labeled diagrams wherever appropriate.**
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- 1A. Describe the effect of reactive oxygen species on lipids, proteins and nucleic acids.
- 1B. Write the role of antioxidants in clinical medicine.
  
- 2A. Discuss the causes and deficiency manifestations of nutritional deficiency anemias.
- 2B. How will you assess the quality of proteins?
  
3. Describe the investigations employed to evaluate a suspected case of inborn error.
  
4. Discuss methods of analysis of
  - 4A. Adrenal hormonal disorders.
  - 4B. Thyroid disorders.
  
- 5A. Discuss the defects in acid base balance.
- 5B. Describe the methods of analysis of pH and electrolyte balance of the body.
  
6. Write short notes on:
  - 6A. Functions of calcitriol.
  - 6B. Metabolic role of zinc.
  - 6C. Folate antagonists.
  - 6D. Serum enzymes in heart diseases.